SPECIFICATION AMENDMENTS

Please insert the following paragraphs immediately after paragraph 52 and before paragraph 53 in the publication of the present patent application. The following paragraphs are copied from Application Serial No. 60/273,902, which is the provisional application of the co-pending application and which was incorporated by reference into the present application. The following paragraphs contain no new matter. (Certain reference numbers have been changed in the following paragraphs in order to avoid repetitive use of those numbers.)

> Turning attention now to Figs. 10-13, another alternative embodiment is illustrated in which reaction subsystem 24 is configured to stop both the rotation and downward movement of blade 40. Exemplary miter saw 10 includes a base assembly 390 adapted to support a workpiece during cutting. Typically, one or more fences 392 are mounted on base assembly 390 and adapted to prevent workpieces from shifting across the base assembly during cutting. Base assembly 390 and fences 392 define a cutting zone 393 in which workpieces may be cut. The miter saw also includes a blade 40 mounted on an arbor 42. The arbor is driven by a motor assembly (not shown) which is supported above base assembly 390 by a pivot arm assembly 394. As shown in Figs. 10 and 11, the pivot arm assembly is pivotal toward and away from cutting zone 393 to cut workpieces with the blade. In addition, some portion of the base assembly may be adjustable to tilt the blade relative to the workpiece to perform beveled cuts.
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> Pivot arm assembly 394 includes a housing 396 pivotally coupled to the base assembly by a first linkage assembly 398 and a second linkage assembly 3100 vertically spaced-apart from the first linkage assembly. First linkage assembly 398 includes a pair of elongate arms 3102 each connected at one end to one or more pivot pins 3104 mounted in the base assembly, and at the opposite end to one or more pivot pins 3106 mounted in housing 396. Similarly, second linkage assembly 3100 includes a pair of elongate arms 3108 each connected at one end to one or more pivot pins 3110 mounted in the base assembly. A generally central portion of each arm 3108 is connected to one or more pivot pins 3112 mounted in housing 396. Arms 3102 and 3108 may be constructed of any suitable material adapted to support the weight of the housing, motor assembly, blade, etc., including metal, plastic, etc. Typically, pivot arm assembly 394 includes a spring or other biasing mechanism (not

shown) adapted to maintain the housing in a fully upward position away from cutting zone 393 when the miter saw is not in use.

As shown in Figs. 10 and 11, pivot pins 3104 are vertically aligned with pivot pins 3110, while pivot pins 3106 are vertically aligned with pivot pins 3112. Additionally, the vertical spacing between pivot pins 3104 and 3110 is substantially equal to the vertical spacing between pivot pins 3106 and 3112. As a result, housing 396 pivots toward and away from cutting zone 393 while maintaining a constant orientation in relation to the base assembly. In other words, the first and second linkage assemblies are configured to pivot housing 396 without causing the housing to rotate relative to the base assembly.

Reaction subsystem 24 includes a brake mechanism 28 having at least one brake pawl 60 housed in a replaceable cartridge 80. The cartridge and brake pawl are mounted on a movable pivot pin 3114 configured to slide within a first set of channels 3116 in either side of housing 396. First channels 3116 define concentric arcs about arbor 42. As a result, pivot pin 3114 is maintained at a constant radius from the arbor as it slides within first channels 3116. A positioning pin 3118 extends from one or both sides of cartridge 80 to slide within a second set of channels 3120. The second set of channels also define concentric arcs about arbor 42 so that positioning pin 3118 maintains a constant radius from the arbor as it slides within the second set of channels. Since the brake pawl is housed in cartridge 80, both the cartridge and brake pawl are maintained in a constant orientation relative to the arbor and the perimeter of the blade as pivot pin 3114 slides within first channels 3116. Additionally, the cartridge and brake pawl tilt with the housing when the miter saw is adjusted to make bevel cuts.

Cartridge 80 typically includes a restraining mechanism adapted to hold the brake pawl away from the blade against the urging of a biasing mechanism. In response to an activation signal, a release mechanism releases the brake pawl from the restraining mechanism to pivot into the blade, usually stopping the blade within approximately 2-5 milliseconds. Exemplary restraining mechanisms, biasing mechanisms, release mechanisms, cartridges and brake pawls are described in more detail above and in the incorporated references. In alternative embodiments, the cartridge may be omitted.

Housing 396 may include a removable section through which the cartridge may be installed or removed. Pivot pin 3114 is typically removed by sliding it completely through the cartridge, thereby releasing the cartridge and brake pawl. Positioning pin 3118 may also be slid completely through the cartridge. Alternatively, positioning pin 3118 may be dual spring-loaded pins which can be depressed generally flush with the side of the cartridge to allow the cartridge to be installed and removed more easily. Optionally, housing 396 may include one or more removable

covers adapted to cover one or both of the first and second set of channels during normal operation. It will be appreciated that cartridge 80 and housing 394 may be configured in any of a variety of different ways to allow the cartridge to be easily installed or removed.

Arms 3108 include distal portions 3122 spaced apart from pivot pins 3110 and extending toward blade 40. As housing 396 is pivoted downward toward the workpiece, distal portions 3122 pivot downward relative to the blade. Likewise, when housing 396 is pivoted upward away from the workpiece, distal portions 3122 pivot upward relative to the blade. Pivot pin 3114 is coupled to second linkage assembly 3100 by a pair of links 3124. The lower end of each link 3124 is coupled to the distal portion of one of arms 3108 by a pivot coupling 3126, while the upper end of each link is pivotally coupled to pivot pin 3114. Thus, pivot pin 3114 is pushed or pulled along first set of channels 3116 as distal portions 3122 pivot relative to the blade. Links 3124 may be constructed of any suitable material including metal, plastic, etc.

As can be seen by comparing Figs. 10 and 11, the cartridge and brake pawl pivot or revolve about the center of blade 40 as second linkage assembly 3100 pivots about pivot pin 3110. The cartridge and brake pawl also can be seen as pivoting around the center of the blade as housing 396 pivots toward and away from the workpiece. Moreover, the cartridge and brake pawl are configured to pivot in a direction counter to the pivot direction of second linkage assembly 3100 and housing 396. In other words, the cartridge and brake pawl pivot about the center of the blade in a counter-clockwise direction (as seen in Fig. 13) when the first linkage assembly and housing pivot about pivot pin 3110 in a clockwise direction. Conversely, the cartridge and brake pawl pivot about the center of the blade in a clockwise direction (as seen in Fig. 13) when the first linkage assembly and housing pivot about pivot pin 3110 in a counter-clockwise direction.

In response to an activation signal from a control subsystem (not shown), brake pawl 60 is pivoted into the teeth of blade 40, as shown in Fig. 13. When the brake pawl engages the blade the angular momentum of the blade produces a force on the brake pawl that tends to urge the brake pawl to move in a clockwise direction along first set of channels 3116. In other words, at least a portion of the angular momentum of the blade is transferred to the brake pawl. The force on brake pawl 60 is transferred to first linkage assembly 3100 by link 3124. As a result, distal portions 3122 are urged upward relative to the blade, thereby tending to pivot housing 396 in a counter-clockwise direction around pivot pin 3110 and away from cutting zone 393.

The amount of upward force on distal portion 3122 will depend on the ratio of the distance between couplings 3112 and 3126, and the distance between couplings 3110 and 3112. As the distance between

couplings 3112 and 3126 is increased relative to the distance between couplings 3110 and 3112, the moment of any upward force at coupling 3126 is increased. Typically, couplings 3110, 3112 and 3126 are arranged so that the moment of the upward force on distal portion 3122 is sufficient to stop any downward movement of the housing and blade under normal operating conditions (i.o., the housing is pivoted downward toward the cutting zone at a normal speed). Optionally, the couplings may be arranged so that the moment of the upward force on distal portion 3122 is sufficient to overcome and reverse normal downward movement of the housing and blade, thereby retracting the blade upward away from cutting zone 393. In any event, brake pawl 60 is arranged to convert at least a portion of the kinetic energy of the rotating blade into an upward force on the housing and blade. Thus, exemplary brake mechanism 28 is configured to stop both rotation of the blade and any downward movement of the blade using a single brake pawl. As a result, only a single cartridge need be replaced after the reaction subsystem has been triggered.

Since the upward force on the housing is produced by the rapid deceleration of the blade, the upward force on the housing is only temporary. Once the rotation of the blade has stopped, the housing is free to pivot toward or away from the cutting zone. Nevertheless, the blade will remain locked against further rotation until the cartridge is removed.

It will be appreciated that while one particular embodiment has been described above, many modifications and alterations are possible. As one example, brake pawl 60 and cartridge 80 may be coupled to distal portions of first linkage assembly 398 rather than second linkage assembly 3100. As another example, second set of channels 3120 may be eliminated and positioning pin 3118 may be positioned on the cartridge to slide within the first set of channels 3116. As a further example, the first and/or second set of channels may be formed in only a single side of housing 396, in which case pivot pin 3114 and/or positioning pin 3118 extend through only a single side of the housing. In view of the many modifications and alterations which are possible, it will be understood that the scope of the invention is not limited to the particular embodiments described herein but includes all such modifications and alterations.

DRAWING AMENDMENTS

Please add drawings 10-13, which are being submitted with this amendment. Those drawings are copies of drawings 3-6 from Application Serial No. 60/273,902, which is the provisional application of the co-pending application and which was incorporated by reference into the present application. The added drawings contain no new matter. (Certain reference numbers have been changed in order to avoid the repetitive use of those numbers.) Copies of these drawings are also being sent under separate cover with a document titled "Request to Amend Drawings."